TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 280-68572-3

Job Description: GSI - McConnell AFB (SWMU 207)

For:
GSI Environmental, Inc
9600 Great Hills Trail, Ste 350E
Austin, TX 78759

Attention: Anna Zabierek

M. Elaine Walker

Approved for release.
Elaine M Walker
Project Manager II
5/18/2015 3:32 PM

Elaine M Walker, Project Manager II
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0156
elaine.walker@testamericainc.com
05/18/2015

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

# Table of Contents

# Table of Contents

# CASE NARRATIVE
# Client: GSI Environmental, Inc
# Project: GSI - McConnell AFB (SWMU 207)
# Report Number: 280-68572-3

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**RECEIPT**

Nine samples were received on 04/30/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.3°C.

The Chain of Custody lists that three samples should be analyzed on a rush turnaround time for the VOC analysis. Additionally, it was requested via email that sample 54400-MW49S-0415 (280-68572-2) be analyzed on a rush turnaround time for the VOC analysis.

Unfortunately, due to current laboratory capacity, the fastest turnaround time that TA Denver is able to provide for the requested analyses is 10 business days. We have looked at the other laboratories in our network, and unfortunately were unable to find another laboratory holding the appropriate certifications (both DOD ELAP and Kansas NELAP) for all of the requested 8260 VOC analytes. As such, the samples were logged for analysis at the Denver laboratory on a 10 business day turnaround time and have been reported under separate cover in SDG 280-68572-2.

All other analyses will be reported under separate cover in SDGs 280-68572-1 and 280-68572-3 (Total Phosphorus as PO4 by method 365.1 and Sulfite by Method SM 4500SO3_B), on a standard, 15 business day turnaround time.

Please note - this report contains the results of Total Phosphorus and Sulfite, which the TestAmerica Denver laboratory does not hold DoD ELAP certification for. These parameters are being reported under the TestAmerica Standard QC program, and not as a DoD QSM 5.0 report.

**TOTAL PHOSPHORUS**

Samples 54400-MW218-0415 (280-68572-3) and 54400-MW219-0415 (280-68572-7) were analyzed for total phosphorus in accordance with EPA Method 365.1. The samples were prepared on 05/07/2015 and analyzed on 05/08/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**SULFITE**

Samples 54400-MW218-0415 (280-68572-3) and 54400-MW219-0415 (280-68572-7) were analyzed for sulfite in accordance with SM20 4500 SO3 B. The samples were analyzed on 05/04/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# SAMPLE SUMMARY

Client: GSI Environmental, Inc Job Number: 280-68572-3

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-68572-3 | 54400-MW218-0415 | Water | 04/29/2015 0922 | 04/30/2015 0915 |
| 280-68572-7 | 54400-MW219-0415 | Water | 04/29/2015 0950 | 04/30/2015 0915 |

# EXECUTIVE SUMMARY - Detections

Client: GSI Environmental, Inc Job Number: 280-68572-3

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **280-68572-3** | **54400-MW218-0415** | | | | | |
| Total Phosphorus as PO4 | | 0.063 | J | 0.15 | mg/L | 365.1 |
| **280-68572-7** | **54400-MW219-0415** | | | | | |
| Total Phosphorus as PO4 | | 0.19 | | 0.15 | mg/L | 365.1 |

# METHOD SUMMARY

Client: GSI Environmental, Inc Job Number: 280-68572-3

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Phosphorus, Total | TAL DEN | EPA 365.1 | |
| Phosphorus, Total | TAL DEN | | MCAWW 365.2/365.3/365 |
| Sulfite | TAL DEN | SM SM 4500 SO3 B | |

**Lab References:**

TAL DEN = TestAmerica Denver

**Method References:**

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

# METHOD / ANALYST SUMMARY

Client: GSI Environmental, Inc

Job Number: 280-68572-3

| Method | Analyst | Analyst ID |
|---|---|---|
| EPA 365.1 | Schwemin, Andrew J | AJS |
| SM SM 4500 SO3 B | Bland, Morgan R | MRB |

**General Chemistry**

**Client Sample ID: 54400-MW218-0415**

Lab Sample ID: 280-68572-3 Date Sampled: 04/29/2015 0922
Client Matrix: Water Date Received: 04/30/2015 0915

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Phosphorus as PO4 | 0.063 | J | mg/L | 0.015 | 0.15 | 1.0 | 365.1 |
| Analysis Batch: 280-276687 | Analysis Date: 05/08/2015 1559 | | | | | | |
| Prep Batch: 280-276489 | Prep Date: 05/07/2015 1504 | | | | | | |
| Sulfite | 0.50 | U HF | mg/L | 0.50 | 2.0 | 1.0 | SM 4500 SO3 B |
| Analysis Batch: 280-275917 | Analysis Date: 05/04/2015 1723 | | | | | | |

**General Chemistry**

**Client Sample ID:** **54400-MW219-0415**

Lab Sample ID: 280-68572-7 Date Sampled: 04/29/2015 0950
Client Matrix: Water Date Received: 04/30/2015 0915

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Phosphorus as PO4 | 0.19 | | mg/L | 0.015 | 0.15 | 1.0 | 365.1 |
| Analysis Batch: 280-276687 | Analysis Date: 05/08/2015 1559 | | | | | | |
| Prep Batch: 280-276489 | Prep Date: 05/07/2015 1504 | | | | | | |
| Sulfite | 0.50 | U HF | mg/L | 0.50 | 2.0 | 1.0 | SM 4500 SO3 B |
| Analysis Batch: 280-275917 | Analysis Date: 05/04/2015 1723 | | | | | | |

Client: GSI Environmental, Inc

Job Number: 280-68572-3

**Method Blank - Batch: 280-276489**

**Method: 365.1**
**Preparation: 365.2/365.3/365**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-276489/4-A | Analysis Batch: | 280-276687 | Instrument ID: | WC_Konelab |
| Client Matrix: | Water | Prep Batch: | 280-276489 | Lab File ID: | 050815TPO4.xls |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.0 mL |
| Analysis Date: | 05/08/2015 1559 | Units: | mg/L | Final Weight/Volume: | 50.0 mL |
| Prep Date: | 05/07/2015 1504 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Total Phosphorus as PO4 | 0.015 | U | 0.015 | 0.15 |

**Lab Control Sample - Batch: 280-276489**

**Method: 365.1**
**Preparation: 365.2/365.3/365**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-276489/3-A | Analysis Batch: | 280-276687 | Instrument ID: | WC_Konelab |
| Client Matrix: | Water | Prep Batch: | 280-276489 | Lab File ID: | 050815TPO4.xls |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50.0 mL |
| Analysis Date: | 05/08/2015 1559 | Units: | mg/L | Final Weight/Volume: | 50.0 mL |
| Prep Date: | 05/07/2015 1504 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Phosphorus as PO4 | 1.53 | 1.66 | 108 | 90 - 110 | |

Client: GSI Environmental, Inc

Job Number: 280-68572-3

**Method Blank - Batch: 280-275917**

**Method: SM 4500 SO3 B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-275917/1 | Analysis Batch: | 280-275917 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 05/04/2015 1723 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Sulfite | 0.50 | U | 0.50 | 2.0 |

**Lab Control Sample - Batch: 280-275917**

**Method: SM 4500 SO3 B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-275917/2 | Analysis Batch: | 280-275917 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 05/04/2015 1723 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfite | 31.0 | 20.0 | 65 | 50 - 150 | |

# DATA REPORTING QUALIFIERS

Client: GSI Environmental, Inc Job Number: 280-68572-3

| Lab Section | Qualifier | Description |
|---|---|---|
| General Chemistry | | |
| | HF | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |
| | U | Indicates the analyte was analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

Client: GSI Environmental, Inc Job Number: 280-68572-3

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-275917** | | | | | |
| LCS 280-275917/2 | Lab Control Sample | T | Water | SM 4500 SO3 B | |
| MB 280-275917/1 | Method Blank | T | Water | SM 4500 SO3 B | |
| 280-68572-3 | 54400-MW218-0415 | T | Water | SM 4500 SO3 B | |
| 280-68572-7 | 54400-MW219-0415 | T | Water | SM 4500 SO3 B | |
| **Prep Batch: 280-276489** | | | | | |
| LCS 280-276489/3-A | Lab Control Sample | T | Water | 365.2/365.3/365 | |
| MB 280-276489/4-A | Method Blank | T | Water | 365.2/365.3/365 | |
| 280-68572-3 | 54400-MW218-0415 | T | Water | 365.2/365.3/365 | |
| 280-68572-7 | 54400-MW219-0415 | T | Water | 365.2/365.3/365 | |
| **Analysis Batch:280-276536** | | | | | |
| LCS 280-276489/3-A | Lab Control Sample | T | Water | 365.1 | 280-276489 |
| MB 280-276489/4-A | Method Blank | T | Water | 365.1 | 280-276489 |
| 280-68572-3 | 54400-MW218-0415 | T | Water | 365.1 | 280-276489 |
| 280-68572-7 | 54400-MW219-0415 | T | Water | 365.1 | 280-276489 |
| **Analysis Batch:280-276687** | | | | | |
| LCS 280-276489/3-A | Lab Control Sample | T | Water | 365.1 | 280-276489 |
| MB 280-276489/4-A | Method Blank | T | Water | 365.1 | 280-276489 |
| 280-68572-3 | 54400-MW218-0415 | T | Water | 365.1 | 280-276489 |
| 280-68572-7 | 54400-MW219-0415 | T | Water | 365.1 | 280-276489 |

**Report Basis**
T = Total

Client: GSI Environmental, Inc Job Number: 280-68572-3

## Laboratory Chronicle

**Lab ID: 280-68572-3** **Client ID: 54400-MW218-0415**

Sample Date/Time: 04/29/2015 09:22 Received Date/Time: 04/30/2015 09:15

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:365.2/365.3/365 | 280-68572-D-3-A | | 280-276687 | 280-276489 | 05/07/2015 15:04 | 1 | TAL DEN | AJS |
| A:365.1 | 280-68572-D-3-A | | 280-276687 | 280-276489 | 05/08/2015 15:59 | 1 | TAL DEN | AJS |
| A:SM 4500 SO3 B | 280-68572-E-3 | | 280-275917 | | 05/04/2015 17:23 | 1 | TAL DEN | MRB |

**Lab ID: 280-68572-7** **Client ID: 54400-MW219-0415**

Sample Date/Time: 04/29/2015 09:50 Received Date/Time: 04/30/2015 09:15

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:365.2/365.3/365 | 280-68572-D-7-A | | 280-276687 | 280-276489 | 05/07/2015 15:04 | 1 | TAL DEN | AJS |
| A:365.1 | 280-68572-D-7-A | | 280-276687 | 280-276489 | 05/08/2015 15:59 | 1 | TAL DEN | AJS |
| A:SM 4500 SO3 B | 280-68572-E-7 | | 280-275917 | | 05/04/2015 17:23 | 1 | TAL DEN | MRB |

**Lab ID: MB** **Client ID: N/A**

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:365.2/365.3/365 | MB 280-276489/4-A | | 280-276687 | 280-276489 | 05/07/2015 15:04 | 1 | TAL DEN | AJS |
| A:365.1 | MB 280-276489/4-A | | 280-276687 | 280-276489 | 05/08/2015 15:59 | 1 | TAL DEN | AJS |
| A:SM 4500 SO3 B | MB 280-275917/1 | | 280-275917 | | 05/04/2015 17:23 | 1 | TAL DEN | MRB |

**Lab ID: LCS** **Client ID: N/A**

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:365.2/365.3/365 | LCS 280-276489/3-A | | 280-276687 | 280-276489 | 05/07/2015 15:04 | 1 | TAL DEN | AJS |
| A:365.1 | LCS 280-276489/3-A | | 280-276687 | 280-276489 | 05/08/2015 15:59 | 1 | TAL DEN | AJS |
| A:SM 4500 SO3 B | LCS 280-275917/2 | | 280-275917 | | 05/04/2015 17:23 | 1 | TAL DEN | MRB |

**Lab References:**
TAL DEN = TestAmerica Denver

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **Phos Cal Int_00292** | 05/14/15 | 05/07/15 | Di Water, Lot na | 100 mL | phos cal std_00019 | 1 mL | Orthophosphate | 10 mg/L |
| | | | | | | | P | 10 mg/L |
| | | | | | | | Total Phosphorus as PO4 | 30.66 mg/L |
| .phos cal std_00019 | 08/01/16 | | Ricca, Lot 4408888 | | (Purchased Reagent) | | Orthophosphate | 1000 mg/L |
| | | | | | | | P | 1000 mg/L |
| | | | | | | | Total Phosphorus as PO4 | 3066 mg/L |
| **phos icv Int_00274** | 05/12/15 | 05/05/15 | Di Water, Lot na | 100 mL | Phos ICV std_00010 | 1 mL | Orthophosphate | 10 mg/L |
| | | | | | | | P | 10 mg/L |
| | | | | | | | Total Phosphorus as PO4 | 30.66 mg/L |
| .Phos ICV std_00010 | 07/18/16 | | Lab Chem, Lot D198-09 | | (Purchased Reagent) | | Orthophosphate | 1000 mg/L |
| | | | | | | | P | 1000 mg/L |
| | | | | | | | Total Phosphorus as PO4 | 3066 mg/L |
| **Sulfite LCS_00128** | 05/05/15 | 05/04/15 | Di Water, Lot na | 1000 mL | sodium sulfit_00005 | 0.314 g | Sulfite | 309.918 mg/L |
| .sodium sulfit_00005 | 03/31/17 | | Acros, Lot A0343849 | | (Purchased Reagent) | | Sulfite | 98.7 % |

# RICCA CHEMICAL COMPANY

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

## Certificate of Analysis

**Phosphorus AA Standard, 1 mL = 1 mg P (1,000 ppm P)**
**$NH_4H_2PO_4$ in $H_2O$**

Lot Number: 4408888 Product Number: AP1KW Expiration Date: AUG 2016 Manufacture Date:8/26/2014

This is a single element solution that was prepared volumetrically to contain the certified value reported. The uncertainty associated with the certified value is the sum of the estimated errors due to the purity of the raw material, the volumetric preparation of the solution, and transpiration of the solution through the container wall.
The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3139.
**This product number replaces 5857 as of 2007.**

**Contains:**

| Name | CAS# | Grade |
|---|---|---|
| Ammonium Dihydrogen Phosphate, $NH_4H_2PO_4$ | 7722-76-1 | High Purity |
| Water, Deionized, $H_2O$ | 7732-18-5 | ACS, ASTM D 1193 (Type I) |

| Test Name | Assay Method | Specification | Result |
|---|---|---|---|
| Appearance | Clarity, Color, Odor | Clear, colorless, odorless | Passed Test |
| Certified Concentration | Based on accurate volumetric preparation | 1000 ± 5 ppm P | 1000 ppm P |

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Shelf Life (unopened container):

| Part Number | Shelf Life |
|---|---|
| AP1KW-100 | 24 months |
| AP1KW-500 | 24 months |

Recommended Storage: 15°C - 30°C (59°F - 86°F)

LaNelle Ohlhausen
Quality Assurance

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

To determine manufacture site using lot number, visit http://www.riccachemical.com/Documents/lot.pdf.

Version: 2

LabChem
performance through chemistry
Jackson's Pointe Commerce Park - Building 1000
1010 Jackson's Pointe Court, Zelienople, PA 16063
Ph: 412-826-5230 | Fax: 724-473-0647 | www.labchem.com

# CERTIFICATE OF ANALYSIS

Description: PHOSPHATE (AS PHOSPHORUS) STANDARD, 1000ppm (1mL = 1mg P)

Catalog Number: LC18590
Lot Number: D198-09

Mfg Date: 07/18/2014
Expiration Date: 07/18/2016

## ANALYTICAL SECTION

| Test | Specification | Test Result |
|---|---|---|
| Appearance | clear, colorless solution | Pass Test |
| Concentration ppm P | 1000ppm +/- 10ppm | 1004ppm |
| Concentration mg P/mL | 1.000 +/- 0.010 mg P/mL | 1.004 mg P/mL |
| Traceable to NIST | Potassium Hydrogen Phthalate | 84L |

Submitted By: Greg Albright, Chemist Supervisor

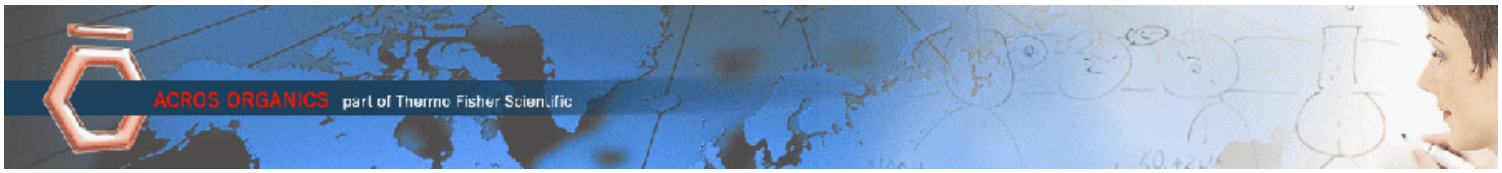
Greg Albright

An ISO9001:2008 certified company. Registration # 0306-01

09/19/2014 9:50:35 AM

Form #17.12 06/19/2012

Page 1 of 1




| | |
|---|---|
| **Version** | 0 |
| **Molecular weight** | 126.04 |
| **Molecular formula** | Na2 O3 S |
| **CAS No** | 7757-83-7 |
| **Linear formula** | Na2SO3 |
| **Flash point (°C)** | |

# Certificate of Analysis

Acros Organics quality system has been found to conform to quality management system ISO9001:2008 standard by SAI global Certificate number CERT-0063301.

This is to certify that units of the below mentioned lot number were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Acros Organics expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Unless otherwise stated, these products are not intended for use in manufacturing, consumption or application of drugs, cosmetics, dialysis, parenteral, injectable products, household chemicals, food additives, agricultural or pesticide products without further processing. The following are the actual analytical results obtained;

| | | | |
|---|---|---|---|
| **Catalog Number** | 21927 | **Quality Test / Release Date** | 24 January 2014 |
| **Lot Number** | A0343849 | **Suggested Retest Date** | January 2019 |

| | |
|---|---|
| **Description** | Sodium sulfite,98.5%,for analysis,anhydrous |
| **Country of Origin** | BELGIUM |
| **Declaration of Origin** | synthetic |

| | |
|---|---|
| **Origin Comment** | |

| Result Name | Specifications | Test Value |
|---|---|---|
| Appearance | White fine crystals or crystalline powder | White fine crystals |
| Assay Iodimetry | >=98 % | 98.5 % |
| Heavy metals (as Pb) | =<10 ppm | =<10 ppm |
| Free acid | passes test | passes test |
| Free alkali (Na2CO3) | =<0.15 % | =<0.15 % |
| Trace analysis | Type: Cl measure =< 100 ppm | Type: Cl measure =< 30 ppm |
| Trace analysis | Type: Fe measure =< 10 ppm | Type: Fe measure =< 10 ppm |
| Trace analysis | Type: As measure =< 1 ppm | Type: As measure =< 1 ppm |


L. Van den Broek, QA Manager Issued: 21 February 2015

Acros Organics
ENA23, zone 1, nr 1350, Janssen Pharmaceuticalaan 3a, B-2440 Geel, Belgium
Tel +32 14/57.52.11 - Fax +32 14/59.34.34 Internet: http://www.acros.com
1 Reagent Lane, Fair Lawn, NJ 07410,USA Fax 201-796-1329

# Certification Summary

Client: GSI Environmental, Inc
Project/Site: GSI - McConnell AFB (SWMU 207)

TestAmerica Job ID: 280-68572-3

| Laboratory | Authority | Program | EPA Region | Certification ID |
|---|---|---|---|---|
| TestAmerica Denver | A2LA | DoD ELAP | | 2907.01 |
| TestAmerica Denver | A2LA | ISO/IEC 17025 | | 2907.01 |
| TestAmerica Denver | Alaska (UST) | State Program | 10 | UST-30 |
| TestAmerica Denver | Arizona | State Program | 9 | AZ0713 |
| TestAmerica Denver | Arkansas DEQ | State Program | 6 | 88-0687 |
| TestAmerica Denver | California | State Program | 9 | 2513 |
| TestAmerica Denver | Connecticut | State Program | 1 | PH-0686 |
| TestAmerica Denver | Florida | NELAP | 4 | E87667 |
| TestAmerica Denver | Georgia | State Program | 4 | N/A |
| TestAmerica Denver | Illinois | NELAP | 5 | 200017 |
| TestAmerica Denver | Iowa | State Program | 7 | 370 |
| TestAmerica Denver | Kansas | NELAP | 7 | E-10166 |
| TestAmerica Denver | Louisiana | NELAP | 6 | 02096 |
| TestAmerica Denver | Maine | State Program | 1 | CO0002 |
| TestAmerica Denver | Minnesota | NELAP | 5 | 8-999-405 |
| TestAmerica Denver | Nevada | State Program | 9 | CO0026 |
| TestAmerica Denver | New Jersey | NELAP | 2 | CO004 |
| TestAmerica Denver | New York | NELAP | 2 | 11964 |
| TestAmerica Denver | North Carolina (WW/SW) | State Program | 4 | 358 |
| TestAmerica Denver | North Dakota | State Program | 8 | R-034 |
| TestAmerica Denver | Oklahoma | State Program | 6 | 8614 |
| TestAmerica Denver | Oregon | NELAP | 10 | 4025 |
| TestAmerica Denver | Pennsylvania | NELAP | 3 | 68-00664 |
| TestAmerica Denver | South Carolina | State Program | 4 | 72002001 |
| TestAmerica Denver | Texas | NELAP | 6 | T104704183-13-8 |
| TestAmerica Denver | USDA | Federal | | P330-13-00202 |
| TestAmerica Denver | Utah | NELAP | 8 | CO00026 |
| TestAmerica Denver | Virginia | NELAP | 3 | 460232 |
| TestAmerica Denver | Washington | State Program | 10 | C583 |
| TestAmerica Denver | West Virginia DEP | State Program | 3 | 354 |
| TestAmerica Denver | Wisconsin | State Program | 5 | 999615430 |
| TestAmerica Denver | Wyoming (UST) | A2LA | 8 | 2907.01 |

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

# GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-68572-3

SDG No.:

Project: GSI - McConnell AFB (SWMU 207)

| Client Sample ID | Lab Sample ID |
|---|---|
| 54400-MW218-0415 | 280-68572-3 |
| 54400-MW219-0415 | 280-68572-7 |

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: 54400-MW218-0415 Lab Sample ID: 280-68572-3

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG ID.:

Matrix: Water Date Sampled: 04/29/2015 09:22

Reporting Basis: WET Date Received: 04/30/2015 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Total Phosphorus as PO4 | 0.063 | 0.15 | 0.015 | mg/L | J | | 1 | 365.1 |
| 14265-45-3 | Sulfite | 0.50 | 2.0 | 0.50 | mg/L | U | HF | 1 | SM 4500 SO3 B |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: 54400-MW219-0415 Lab Sample ID: 280-68572-7

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG ID.:

Matrix: Water Date Sampled: 04/29/2015 09:50

Reporting Basis: WET Date Received: 04/30/2015 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Total Phosphorus as PO4 | 0.19 | 0.15 | 0.015 | mg/L | | | 1 | 365.1 |
| 14265-45-3 | Sulfite | 0.50 | 2.0 | 0.50 | mg/L | U | HF | 1 | SM 4500 SO3 B |

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver  Job No.: 280-68572-3

SDG No.:

Analyst: AJS  Batch Start Date: 05/08/2015

Reporting Units: mg/L  Analytical Batch No.: 276687

| Sample Number | QC Type | Time | Analyte | Result | Spike Amount | (%) Recovery | Limits | Qual | Reagent |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ICV | 15:59 | Total Phosphorus as PO4 | 1.31 | 1.23 | 107 | 90-110 | | phos icv Int_00274 |
| 2 | ICB | 15:59 | Total Phosphorus as PO4 | 0.015 | | | | U | |
| 10 | CCV | 15:59 | Total Phosphorus as PO4 | 1.68 | 1.53 | 109 | 90-110 | | Phos Cal Int_00292 |
| 11 | CCB | 15:59 | Total Phosphorus as PO4 | 0.015 | | | | U | |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

| Method | Lab Sample ID | Analyte | Result | Qual | Units | RL | Dil |
|---|---|---|---|---|---|---|---|
| Batch ID: 276687 | Date: 05/08/2015 15:59 | Prep Batch: 276489 | Date: 05/07/2015 15:04 | | | | |
| 365.1 | MB 280-276489/4-A | Total Phosphorus as PO4 | 0.015 | U | mg/L | 0.15 | 1 |
| Batch ID: 275917 | Date: 05/04/2015 17:23 | | | | | | |
| SM 4500 SO3 B | MB 280-275917/1 | Sulfite | 0.50 | U | mg/L | 2.0 | 1 |

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

Matrix: Water

| Method | Lab Sample ID | Analyte | Result | C | Unit | Spike Amount | Pct. Rec. | Limits | RPD | RPD Limit | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Batch ID: 276687 | Date: 05/08/2015 15:59 | | Prep Batch: 276489 | | Date: 05/07/2015 15:04 | | | | | | |
| | | | | | LCS Source: Phos Cal Int_00292 | | | | | | |
| 365.1 | LCS 280-276489/3-A | Total Phosphorus as PO4 | 1.66 | | mg/L | 1.53 | 108 | 90-110 | | | |
| Batch ID: 275917 | Date: 05/04/2015 17:23 | | | | | | | | | | |
| | | | | | LCS Source: Sulfite LCS_00128 | | | | | | |
| SM 4500 SO3 B | LCS 280-275917/2 | Sulfite | 20.0 | | mg/L | 31.0 | 65 | 50-150 | | | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver  Job Number: 280-68572-3

SDG Number:

Matrix: Water  Instrument ID: WC_Konelab

Method: 365.1  MDL Date: 11/29/2010 00:00

Prep Method: 365.2/365.3/365

| Analyte | Wavelength/ Mass | RL (mg/L) | MDL (mg/L) |
|---|---|---|---|
| Total Phosphorus as PO4 | | 0.15 | 0.01533 |

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-68572-3

SDG Number:

Matrix: Water Instrument ID: WC_Konelab

Method: 365.1 XMDL Date: 11/29/2010 00:00

| Analyte | Wavelength/ Mass | XRL (mg/L) | XMDL (mg/L) |
|---|---|---|---|
| Total Phosphorus as PO4 | | 0.15 | 0.01533 |

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-68572-3

SDG Number:

Matrix: Water Instrument ID: NOEQUIP

Method: SM 4500 SO3 B MDL Date: 11/01/2009 00:00

| Analyte | Wavelength/ Mass | RL (mg/L) | MDL (mg/L) |
|---|---|---|---|
| Sulfite | | 2 | 0.5 |

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-68572-3

SDG Number:

Matrix: Water Instrument ID: NOEQUIP

Method: SM 4500 SO3 B XMDL Date: 11/01/2009 00:00

| Analyte | Wavelength/ Mass | XRL (mg/L) | XMDL (mg/L) |
|---|---|---|---|
| Sulfite | | 2 | 0.5 |

12-IN
PREPARATION LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

Prep Method: 365.2/365.3/365

| Lab Sample ID | Preparation Date | Prep Batch | Initial Weight | Initial Volume (mL) | Final Volume (mL) |
|---|---|---|---|---|---|
| LCS 280-276489/3-A | 05/07/2015 15:04 | 276489 | | 50.0 | 50.0 |
| MB 280-276489/4-A | 05/07/2015 15:04 | 276489 | | 50.0 | 50.0 |
| 280-68572-3 | 05/07/2015 15:04 | 276489 | | 50.0 | 50.0 |
| 280-68572-7 | 05/07/2015 15:04 | 276489 | | 50.0 | 50.0 |

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

Instrument ID: WC_Konelab Method: 365.1

Start Date: 05/08/2015 15:59 End Date: 05/08/2015 15:59

| Lab Sample ID | D / F | Type | Time | Analytes | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | T-PO4 | | | | | | | | | | | | | | | | | | | |
| ICV 280-276489/1-A | 1 | | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| ICB 280-276489/2-A | 1 | | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| LCS 280-276489/3-A | 1 | T | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| MB 280-276489/4-A | 1 | T | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:59 | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:59 | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:59 | | | | | | | | | | | | | | | | | | | | |
| 280-68572-3 | 1 | T | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| 280-68572-7 | 1 | T | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| CCV 280-276489/11-A | 1 | | 15:59 | X | | | | | | | | | | | | | | | | | | | |
| CCB 280-276489/12-A | 1 | | 15:59 | X | | | | | | | | | | | | | | | | | | | |

Prep Types

T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-68572-3

SDG No.:

Instrument ID: NOEQUIP Method: SM 4500 SO3 B

Start Date: 05/04/2015 17:23 End Date: 05/04/2015 17:23

| Lab Sample ID | D/F | Type | Time | Analytes | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | O3S-2 | | | | | | | | | | | | | | | | | | | |
| MB 280-275917/1 | 1 | T | 17:23 | X | | | | | | | | | | | | | | | | | | | |
| LCS 280-275917/2 | 1 | T | 17:23 | X | | | | | | | | | | | | | | | | | | | |
| 280-68572-3 | 1 | T | 17:23 | X | | | | | | | | | | | | | | | | | | | |
| 280-68572-7 | 1 | T | 17:23 | X | | | | | | | | | | | | | | | | | | | |

Prep Types

T = Total/NA

## Data Review Checklist – Calibration Methods

| Method(s): | Instrument: | Run Date | Analyst Initials: | SOP #: |
|---|---|---|---|---|
| 365.1 (TPO4) | Konelab | 5/8/15 | AJS | WC 6017 |
| | Prep Batch(s): 276489 | | Analytical Batch: | 276687 |

| A. Calibration/Instrument Run QC | Yes | No | N/A | 2nd |
|---|---|---|---|---|
| Minimum of five standards in ICAL or as specified in SOP? | ✓ | | | |
| Correlation coefficient ≥ 0.995 ? | ✓ | | | |
| Second-source ICV analyzed, and recovery within acceptance limits? | ✓ | | | ✓ |
| ICB analyzed immediately after the ICV & results < the RL | ✓ | | | ✓ |
| CCV analyzed after every ten samples & recovery within acceptance limits? | ✓ | | | ✓ |
| CCB analyzed after every CCV & results < RL? | ✓ | | | ✓ |
| Absolute value of the x intercept is < ± ½ the RL? | ✓ | | | ✓ |
| Elution order verified? (anions) | | | ✓ | ✓ |
| Were manual integrations performed correctly and properly documented? (anions) | | | ✓ | ✓ |
| **B. Sample Results** | | | | |
| All samples greater than highest calibration standard diluted and reanalyzed? | ✓ | | | ✓ |
| Do associated RLs/MDLs reflect dilutions or limited sample volume? | ✓ | | | ✓ |
| All reported results bracketed by in control CCV results? | ✓ | | | ✓ |
| Sample analyses done within holding time? **If no, create HTV NCM. NCM #** | ✓ | | | ✓ |
| Are any results over calibration range? If reported, are results E flagged? | | ✓ | | ✓ |
| Are J values the result of over dilution? | | ✓ | | ✓ |
| Client requirements reviewed and met? | ✓ | | | ✓ |
| Were data manually transcribed from instrument printouts or benchsheets into TALS verified 100% including dilution factors, significant figures and correct units? (If Applicable) | | | ✓ | ✓ |
| Do the prep and analysis dates in TALS reflect the actual dates? | ✓ | | | |
| Were peak assignments verified? (anions) | | | ✓ | ✓ |
| Were manual integrations performed correctly and properly documented? (anions) | | | ✓ | ✓ |
| **C. Preparation/Matrix QC** | | | | |
| Method blank < ½ RL or all reported samples > 10x blank have NCM? - **(COD, Phenol MB <RL)** | ✓ | | | ✓ |
| Method blank < ½ RL or NCM provided? - **(COD, Phenol MB <RL)** | ✓ | | | ✓ |
| LCS/LCSD run for batch and within QC limits? | ✓ | | | ✓ |
| MS/MSD run at required frequency? Verify that MS/MSD failures are matrix issues and not analytical issues such as not spiking or not applying the appropriate dilution. | ✓ | | | ✓ |
| DUP run at required frequency? | | | ✓ | ✓ |

| Menu or Tab | Check | 1st | 2nd |
|---|---|---|---|
| Analyst Desktop | Create or open batch | | |
| View Batch Info | Confirm all fields are populated | ✓ | ✓ |
| | Edit Analyst ID as is appropriate | ✓ | ✓ |
| Run log | Verify the correct samples and QC are run at the correct frequency (i.e., 10 samples per CCV) | ✓ | ✓ |
| Sample List | Confirm all Graphics have been uploaded (IC only) | NA | NA |
| | In edit mode, If prompted to process samples, select "Yes" | ✓ | |
| | Confirm samples are identified (Blue P Icon) | ✓ | ✓ |
| | Confirm correct analysis date and time are listed | ✓ | ✓ |
| | Confirm samples have the correct dilution factors. **TOC – Check for manual dilutions not entered into instrument run log, Auto dilutions (Aut. Dil.) and Injections volume (Inj. Vol.)** | ✓ | ✓ |
| | Confirm samples have the correct method chain assigned | ✓ | ✓ |
| | Confirm that solid samples have the % moisture listed | NA | NA |
| Worksheet | Populate all appropriate fields in the worksheet. Initial Amount, Final Amount, pH, etc. | ✓ | ✓ |
| Reagents | Confirm reagents are correct and properly associated with QC samples. Confirm that reagent amounts are correct. If reagents are new, verify that the correct COA has been attached to the source standard | ✓ | ✓ |
| Results | Check for special instructions (Login, Method and Sample comments) - red notebook icon | ✓ | ✓ |
| | Check for any QC failures | ✓ | ✓ |
| | Set status for samples based on QC and sample results info (i.e., set to primary analysis with passing QC or reject samples without passing QC or samples that are over-range). | ✓ | ✓ |
| | Address any results that are reported without passing QC with an NCM | ✓ | ✓ |
| QC Links | Confirm QC links are correct | ✓ | ✓ |
| Hist. Data Check | Check historical data. Print charts for outliners. Take corrective action as is appropriate | ✓ | ✓ |
| Sample List | Re-calculate data and set to appropriate review status (1st or 2nd level review) | ✓ | ✓ |
| | Scan and attach raw data & save batch | ✓ | ✓ |

Analyst: Andy Date: 5/8/15 2nd Level Reviewer: Caitlyn Mclaurence Date: 5/11/15

Laboratory
Analyzer User

5/8/2015 16:47

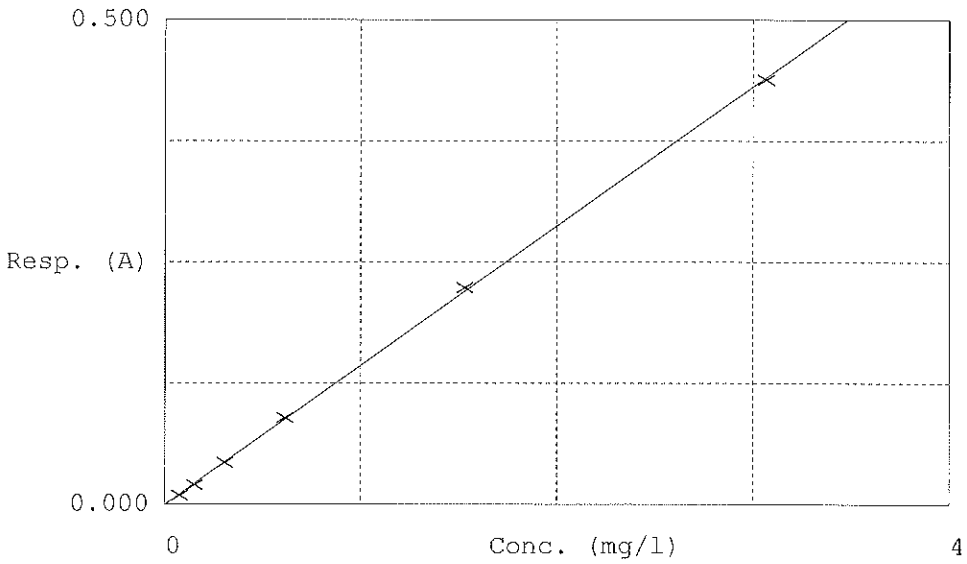
Test T-PO4

Accepted 5/6/2015 21:14

Factor 6.956
Bias -0.001

Coeff. of det. 0.999814

Errors




| | Calibrator | Response | Calc. con. | Conc. | Errors |
|---|---|---|---|---|---|
| 1 | TPO4 .0766 | 0.009 | 0.06711 | 0.07665 | |
| 2 | TPO4 0.153 | 0.020 | 0.14276 | 0.15330 | |
| 3 | TPO4 0.307 | 0.043 | 0.30268 | 0.30660 | |
| 4 | TPO4 0.613 | 0.089 | 0.62542 | 0.61320 | |
| 5 | TPO4 1.533 | 0.224 | 1.55913 | 1.53300 | |
| 6 | TPO4 3.066 | 0.438 | 3.05165 | 3.06600 | |

Calibrator Information

TPO4 .0766
TPO4 0.153
TPO4 0.307
TPO4 0.613
TPO4 1.533
TPO4 3.066

Laboratory
Analyzer User

5/8/2015 16:47

Test: T-PO4

| Sample Id | Result | Dil. 1 + | Response | Errors |
|---|---|---|---|---|
| icv 280-276489/1 | 1.3140 | 0.0 | 0.188 | |
| icb 280-276489/2 | 0.0024 | 0.0 | -0.000 | Blank resp. low |
| lcs 280-276489/3 | 1.6552 | 0.0 | 0.237 | |
| mb 280-276489/4- | 0.0048 | 0.0 | 0.000 | Blank resp. low |
| 280-68490-e-1-a | 0.0193 | 0.0 | 0.002 | Blank resp. low |
| MS 280-68490-e-1-b | 1.6709 | 0.0 | 0.240 | Blank resp. low |
| MSD 280-68490-e-1-c | 1.6802 | 0.0 | 0.241 | Blank resp. low |
| 280-68572-d-3-a | 0.0632 | 0.0 | 0.009 | |
| 280-68572-d-7-a | 0.1947 | 0.0 | 0.027 | Blank resp. low |
| ccv 280-276489/1 | 1.6756 | 0.0 | 0.240 | |
| ccb 280-276489/1 | 0.0066 | 0.0 | 0.000 | |

| | |
|---|---|
| N | 11 |
| Mean | 0.7533 |
| SD | 0.81784 |
| CV% | 108.56 |

ATS
5/8/15

## Wet Chemistry Data Review Checklist for Titration Methods

Method(s): SM4500S03-B | Instrument: burette | SOP #: WC0054 | Analyst: MB

Run Date: 05/04/15 | Prep Batch(s): NA | Analytical Batch: 275917

| A. Calibration/Instrument Run QC | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|
| Was the normality of the titrant verified and found acceptable? | / | | | |
| **B. Sample Results** | | | | |
| Are all sample dilutions appropriate and do associated RLs/MDLs reflect required dilutions or limited sample volume? | / | | | / |
| All reported results bracketed by in control CCV/CCB? | | | / | / |
| Sample analyses done within holding time? **If no, create HTV NCM. NCM #** | | | / | / |
| Initial pH check documented for all samples (if required)? | | | / | / |
| Preparation benchsheet completed and included in package (if applicable)? | | | / | / |
| Special client requirements checked? | / | | | / |
| Was data manually transcribed from instrument printouts or benchsheet into TALS verified 100% including dilution factors and significant figures? (If Applicable) | / | | | / |
| Do the prep and analysis dates in TALS reflect the actual dates? | / | | | / |
| STD/True Value information is updated and included? | / | | | / |
| **C. Preparation/Matrix QC** | | | | |
| Method blank < ½ RL or all reported samples > 10x blank? – **(Alkalinity MB <RL)** | / | | | / |
| Method blank < ½ RL or NCM provided? – **(Alkalinity MB <RL)** | / | | | / |
| LCS/LCSD run for batch and within QC limits? | / | | | / |
| MS/MSD run at required frequency and within limits or NCM written? | | | / | |
| DUP run at required frequency and RPD within 20% or NCM written? | / | | | / |

| Menu or Tab | Check | 1st | 2nd |
|---|---|---|---|
| Analyst Desktop | Create or open batch | | |
| View Batch Info | Confirm all fields are populated | / | / |
| | Edit Analyst ID as is appropriate | / | / |
| Run log | Verify the correct samples and QC are run at the correct frequency (i.e., 10 samples per CCV) | / | / |
| Sample List | In Edit mode, If prompted to process samples, select "Yes" | / | / |
| | Confirm samples are identified (Blue P Icon) | / | / |
| | Confirm correct analysis date and time are listed | / | / |
| | Confirm samples have the correct dilution factors | / | / |
| | Confirm samples have the correct method chain assigned | / | / |
| | Confirm that solid samples have the % moisture listed | / | / |
| Worksheet | Populate all appropriate fields in the worksheet. Initial Amount, Final Amount, pH, etc. | / | / |
| | Confirm that data are entered correctly. Verify pH is recorded when appropriate for the method. | / | / |
| Reagents | Confirm reagents are correct and properly associated with QC samples. Confirm that reagent amounts are correct. If reagents are new verify that the correct COA has been attached to the source standard | / | / |
| Results | Check for special instructions (Login, Method and Sample comments) - red notebook icon | / | / |
| | Check for any QC failures | / | / |
| | Check for "E" flagged (over-range) data | / | / |
| | Set status for samples based on QC and sample results info (i.e., set to primary analysis with passing QC or reject samples without passing QC or samples that are over-range) | / | / |
| | Address any results that are reported without passing QC with an NCM | / | / |
| QC Links | Confirm QC links are correct | / | / |
| Hist. Data Check | Check historical data. Print charts for outliners. Take corrective action as is appropriate | / | / |
| Sample List | Re-calculate data and set to appropriate review status (1st or 2nd level review) | / | / |
| | Scan and attach raw data & save batch | / | / |

| | | |
|---|---|---|
| Analyst: MB | Date: 050515 | Analyst Comments: — |
| Reviewer: | Date: 5/11/15 | Reviewer Comments: — |

# Sulfite by Titration 377.1 and SM 4500 $SO_3^{-2}$ B

| Titration Solutions & Reagents | | | | | |
|---|---|---|---|---|---|
| **Analyst:** | MB | Solution 1: | SO3 titrant_00004 | Solution 4: | Sulfamic Acid_00010 |
| Date: | 5/4/2015 | Normality: | 0.0125 | Exp Date: | 3/31/2016 |
| Batch No. | 275917 | Exp. Date: | 6/30/2015 | Solution 5: | SO3 H2SO4_0011 |
| SOP No.: | DV-WC-0056 | Solution 2: | EDTA Solution_00030 | Exp Date: | 5/10/2015 |
| Rev.: | 2.3 | Exp. Date: | 5/15/2015 | LCS ID: | Sulfite LCS_00128 |
| RL (mg/L): | 2 | Solution 3: | Starch Ind_00025 | Exp Date: | 5/5/2015 |
| MDL (mg/L): | 0.5 | Exp Date: | 6/30/2015 | Spike Conc: | 20 mg/L |

| Sample ID | Sample Volume (mL) | Buret Start (mL) | Buret Stop (mL) | Blank (mL) | Final mL (blank corrected) | Conc (mg/L) | Dilution Factor | Final Conc (mg/L) | % Rec. |
|---|---|---|---|---|---|---|---|---|---|
| MB | 50 | 20 | 20.1 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| LCS | 50 | 20.10 | 22.20 | 0.1 | 2.00 | 20.000 | 1 | 20.00 | 100.00 |
| LCSD | | | | 0.1 | -0.10 | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| 280-68601-f-2 | 50 | 22.20 | 22.30 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| du 280-68601-f-2 | 50 | 22.30 | 22.40 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| 280-68601-f-2 | 50 | 22.40 | 22.50 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| 280-68572-e-3 | 50 | 23.00 | 23.10 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| 280-68572-e-7 | 50 | 23.10 | 23.20 | 0.1 | 0.00 | 0.000 | 1 | ND | -- |
| 280-68607-n-1 | 5 | 24.00 | 28.60 | 0.1 | 4.50 | 450.000 | 10 | 450.00 | -- |

MB 05/04/15

# GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 280-68572-3

SDG No.:

Batch Number: 276489  Batch Start Date: 05/07/15 15:04  Batch Analyst: Schwemin, Andrew J

Batch Method: 365.2/365.3/365  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | Phos Cal Int 00292 | phos icv Int 00274 | AnalysisComment | |
|---|---|---|---|---|---|---|---|---|---|
| ICV 280-276489/1 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | | 2 mL | pH 2 | |
| ICB 280-276489/2 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | | | pH 2 | |
| LCS 280-276489/3 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | 2.5 mL | | pH 2 | |
| MB 280-276489/4 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | | | pH 2 | |
| CCV 280-276489/11 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | 2.5 mL | | pH 2 | |
| CCB 280-276489/12 | | 365.2/365.3/ 365, 365.1 | | 50.0 mL | 50.0 mL | | | pH 2 | |
| 280-68572-D-3 | 54400-MW218-0415 | 365.2/365.3/ 365, 365.1 | T | 50.0 mL | 50.0 mL | | | pH 2 | |
| 280-68572-D-7 | 54400-MW219-0415 | 365.2/365.3/ 365, 365.1 | T | 50.0 mL | 50.0 mL | | | pH 2 | |

| Batch Notes | |
|---|---|
| Block Digestor Name | A & B |
| First End time | 1900 |
| Ammonium Persulfate Lot # | Ammonium SO4_00018 |
| Oven, Bath or Block Temperature 1 | 140 Centigrade |
| Pipette ID | wc5MLBB |
| First Start time | 1700 |
| Sulfuric Acid Reagent ID Number | 11N h2s04_00037 |
| ID number of the thermometer | 140 |
| Digestion Tube/Cup Lot # | 1408268-7A-4332-CA |
| Uncorrected Temperature | 140 Celsius |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 280-68572-3

SDG No.:

Batch Number: 276536  Batch Start Date: 05/07/15 20:53  Batch Analyst: Schwemin, Andrew J

Batch Method: 365.1  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | CalcMsg | | | |
|---|---|---|---|---|---|---|---|---|---|
| LCS 280-276489/3-A | | 365.1 | | 2.0 mL | 2.0 mL | OK | | | |
| MB 280-276489/4-A | | 365.1 | | 2.0 mL | 2.0 mL | OK | | | |
| 280-68572-D-3-A | 54400-MW218-0415 | 365.1 | T | 2.0 mL | 2.0 mL | OK | | | |
| 280-68572-D-7-A | 54400-MW219-0415 | 365.1 | T | 2.0 mL | 2.0 mL | OK | | | |

| Batch Notes | |
|---|---|
| Ammonium Molybdate Reagent ID Number | tphos color1_00036 |
| Ascorbic Acid Reagent ID Number | Ascorbic Acid_00168 |
| Potassium Antimonyl Tartrate Reagent ID | tphos color1_00036 |
| Pipette ID | wc5MLBB wc1000BB |
| Perform Calculation (0=No, 1=Yes) | 1 |
| Sulfuric Acid Reagent ID Number | tphos color1_00036 |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 280-68572-3

SDG No.:

Batch Number: 276687  Batch Start Date: 05/08/15 15:59  Batch Analyst: Schwemin, Andrew J

Batch Method: 365.1  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | CalcMsg | | | |
|---|---|---|---|---|---|---|---|---|---|
| ICV 280-276489/1-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| ICB 280-276489/2-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| LCS 280-276489/3-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| MB 280-276489/4-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| 280-68572-D-3-A | 54400-MW218-0415 | 365.1 | T | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| 280-68572-D-7-A | 54400-MW219-0415 | 365.1 | T | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| CCV 280-276489/11-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |
| CCB 280-276489/12-A | | 365.1 | | 2.0 mL | 2.0 mL | Not Calculated. No Phosphorus result | | | |

| Batch Notes | |
|---|---|
| Ammonium Molybdate Reagent ID Number | tphos color1_00036 |
| Ascorbic Acid Reagent ID Number | Ascorbic Acid_00168 |
| Potassium Antimonyl Tartrate Reagent ID | tphos color1_00036 |
| Pipette ID | wc5MLBB wc1000BB |
| Perform Calculation (0=No, 1=Yes) | 1 |
| Sulfuric Acid Reagent ID Number | tphos color1_00036 |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 280-68572-3

SDG No.:

Batch Number: 275917  Batch Start Date: 05/04/15 17:23  Batch Analyst: Bland, Morgan R

Batch Method: SM 4500 SO3 B  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | TitrantBlank | TitrantVolume1 | Sulfite LCS 00128 | |
|---|---|---|---|---|---|---|---|---|---|
| MB 280-275917/1 | | SM 4500 SO3 B | | 50 mL | 50 mL | 0.1 mL | 0.00 mL | | |
| LCS 280-275917/2 | | SM 4500 SO3 B | | 50 mL | 50 mL | 0.1 mL | 2.00 mL | 5 mL | |
| 280-68572-E-3 | 54400-MW218-0415 | SM 4500 SO3 B | T | 50 mL | 50 mL | 0.1 mL | 0.00 mL | | |
| 280-68572-E-7 | 54400-MW219-0415 | SM 4500 SO3 B | T | 50 mL | 50 mL | 0.1 mL | 0.00 mL | | |

| Batch Notes | |
|---|---|
| Batch Comment | pipets: 1000AB ,5000EE, 1000CC |
| Nominal Amount Used | 50 mL |
| Normality | 0.0125 N |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# Shipping and Receiving Documents

**TestAmerica Denver**
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

# Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

| Client Information | Sampler: A. Zabierek | Lab PM: Walker, Elaine M | Carrier Tracking No(s): FedEx 807744436753 | COC No: 280-36098-14680.3 |
|---|---|---|---|---|
| Client Contact: ~~Mr. Steve Gragert~~ Anna Zabierek | Phone: 512 346 4474 | E-Mail: elaine.walker@testamericainc.com | | Page: |
| Company: ~~URS Corporation~~ GSI Environmental | | | | Job #: 3969-211 |
| Address: ~~12420 Shamrock Plaza, Suite 300~~ 4600 Great Hills Trail Suite 350E | Due Date Requested: | | | |
| City: ~~Omaha~~ Austin | TAT Requested (days): STD TAT + Rush as specified | | | |
| State, Zip: ~~NE, 68154~~ TX 78759 | PO #: 306387 | | | |
| Phone: 512-346 4474 | WO #: 6170799 / Vendor # 1427536 | | | |
| Email: ~~steve.gragert@urs.com~~ aiw@gsi-net.com | Project #: 28003908 3969-211 | | | |
| Project Name: McConnell AFB LTM & IMPM | SSOW#: | | | |
| Site: SWMU207 | | | | |

Analysis Requested

Preservation Codes:

| | |
|---|---|
| A - HCL | M - Hexane |
| B - NaOH | N - None |
| C - Zn Acetate | O - AsNaO2 |
| D - Nitric Acid | P - Na2O4S |
| E - NaHSO4 | Q - Na2SO3 |
| F - MeOH | R - Na2S2SO3 |
| G - Amchlor | S - H2SO4 |
| H - Ascorbic Acid | T - TSP Dodecahydrate |
| I - Ice | U - Acetone |
| J - DI Water | V - MCAA |
| K - EDTA | W - ph 4-5 |
| L - EDA | Z - other (specify) |

280-68572 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 8260B-DOD5-VOC,-Water | 6010C-DOD5-Tot Fe, Ca, K, Mg, Mn-W | 6010B-Dissolved Fe (Filtered) Water | 9056_28D-Sulfate/Chloride, 9056 4gm | SM4500SO3_B-Sulfite-W | 365.1 Phosphate-W | 2320B-Alk-W | 2540C-Calcd TDS W | 7196A-Hex Chrome-W | Containers | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | | | | | | | | |
| 54403-TB09-0415 | 4.28.15 | X | A | W | | | X | | | | | | | | | | |
| 54400-MW495-0415 | 4.29.15 | 1708 | A | W | | | X | | | | | | | | | | |
| 54400-MW218-0415 | 4.29.15 | 0922 | A/D/S | W | | | X | X | X | X | X | X | X | | | | rush VOC |
| 54401-MW37-0415 | 4.29.15 | 1308 | A | W | | | X | | | | | | | | | | |
| 54400-MW37-0415 | 4.29.15 | 1308 | A | W | | | X | | | | | | | | | | rush VOC |
| 54400-MW217-0415 | 4.29.15 | 1530 | | | | | X | | | | | | | | | | |
| 54400-MW219-0415 | 4.29.15 | 0950 | A/D/S | | | | X | X | X | X | X | X | X | | | | rush VOC |
| 54400-MW178-0415 | 4.28.15 | 1850 | | | | | X | | | | | | | | | | |
| 54402-EB09-0415 | 4.28.15 | 1930 | | | | | | | | | | | | | | | |

| | |
|---|---|
| *Possible Hazard Identification* ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological | *Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)* ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months |
| Deliverable Requested: I, II, III, IV, Other (specify) Level IV | Special Instructions/QC Requirements: |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by: | | Date: | | Time: | | Method of Shipment: | |
| Relinquished by: | Date/Time: 4.29.15 / 1945 | Company | Received by: | | Date/Time: 4/30/15 915 | Company | |
| Relinquished by: | Date/Time: | Company | Received by: | | Date/Time: | Company | |
| Relinquished by: | Date/Time: | Company | Received by: | | Date/Time: | Company | |

| Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: Thermometer ID MS 2.1 Corr Fac 0.2 4/30/15 |
|---|---|---|

Page 45 of 46

05/18/2015

# Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 280-68572-3

**Login Number: 68572**
**List Number: 1**
**Creator: Soto, Mayra A**

**List Source: TestAmerica Denver**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |